

## CLAIMS

1. A method in a computer system for identifying at runtime a resource allocation error generated by a virtual machine compiler encompassing generating code to perform steps at runtime, said steps comprising:
  - obtaining a resource allocation indicator at runtime;
  - testing at least one bit of said resource allocation indicator, wherein said at least one bit corresponds to an allocated resource;
  - halting execution if said at least one corresponding bit of said resource allocation indicator is set;
  - setting said at least one corresponding bit, when said at least one corresponding bit is unset, to indicate allocation of said corresponding resource;
  - and,
  - unsetting said at least one corresponding bit when said corresponding resource is deallocated.
2. The method of claim 1 wherein the halting step performed at runtime further comprises generating an error condition when said at least one bit is set.
3. The method of claim 1 wherein the steps performed at runtime further comprise:
  - unsetting said at least one corresponding bit following a conditional branch wherein said corresponding resource is no longer required.

0585433-051401  
T04750 E45860

4. A method in a computer system of generating code to track at runtime the allocation of registers used in a virtual machine comprising:

generating code to allocate in memory a register mapping indicator;

generating code to determine if a register is available for allocation

comprising:

generating code to test at least one bit of said register mapping indicator before loading the corresponding register with a value;

generating code to set said at least one bit of said register mapping indicator if said at least one bit is unset and allocation of said register is required;

generating code to fail if said at least one bit of said register mapping indicator is set and allocation of said register is required; and,

generating code to clear said at least one bit of said register mapping indicator when said register is no longer used.

5. A method in a computer system for tracking temporary register allocated by a virtual machine compiler comprising:

allocating a temporary register mapping indicator;

determining if a register is available for allocation by executing the steps

comprising:

testing at least one bit of said temporary register mapping indicator before loading said register with a value;

setting said at least one bit of said temporary register mapping indicator if said at least one bit is unset;

failing if said at least one bit of said temporary register mapping indicators is set; and,

clearing said at least one bit of said temporary register mapping indicators when said register is no longer used.

6. A computer system for processing register allocation in a computer comprising:

a memory unit configured to store at least one allocation indicator;

a plurality of registers;

a compiler configured to generate code that will track at runtime the allocation of registers by executing the steps of:

designating an address in said memory unit to represent an allocation indicator;

loading said allocation indicator into one of said plurality of registers;

testing a bit of said allocation indicator to determine if said one of said plurality of registers is available for allocation;

setting said bit of said allocation indicator when it is unset to indicate that said one of said registers is unavailable for allocation;

failing when said bit is previously set; and,

0985433.051401  
F04T50. EET55860

clearing said at least one bit of said allocation indicator when said register is no longer used.

098543 0540  
T04T50" E645860